UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,883	01/29/2004	Hironori Yasukawa	500.43450X00	2307

			EXAMINER
24956	7590	07/17/2006	SAVLA, ARPAN P

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ALEXANDRIA, VA 22314

ART UNIT	PAPER NUMBER
2185	

DATE MAILED: 07/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

This Office action is in response to Applicant's communication filed April 24, 2006

in response to the Office action dated January 24, 2005. Claims 1, 3, 4, 6, and 7 have

been amended. Claims 1-7 are pending in this application.

OBJECTIONS

Specification

1.   In view of Applicant's amendment, the objections to the specification have been

withdrawn.

Claims

2.   In view of Applicant's amendment, the objections to **claims 1, 4, and 6-7** have

been withdrawn.

3.   **Claim 3** is objected to because of the following informalities: The phrase "include

of a" in line 2 should read "include a."

Appropriate corrections are required.

REJECTIONS NOT BASED ON PRIOR ART

Claim Rejections - 35 USC § 112

4.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

5.   **Claims 1-7** are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject

matter which applicant regards as the invention.

6.   **As per claims 1, 4, and 7**, the phrase "...to provide a set storage capacity of the

first memory to each user usable by the user so as not to..." is vague and indefinite.

The structure of the English used in the phrase does not make sense. For the purposes

of examining the instant amendment the Examiner will interrupt the phrase to read "...to

provide a set storage capacity of the first memory to each user so as not to..."

7.   **Also per claims 1, 4, and 7**, the claims recite the limitation "the other users" in

the last line of each claim respectively. There is insufficient antecedent basis for this

limitation in the claim. Applicant may consider amending the claim to read "other

users."

REJECTIONS BASED ON PRIOR ART

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

9.   **Claims 1-7 are rejected under 35 U.S.C. 103(a) as being obvious over**

Blumenau et al. (U.S. Patent 6,260,120) in view of Voigt et al. (U.S. Patent

5,960,451), hereinafter referred to as "Voigt", and in further view of Voigt et al.

(U.S. Patent 5,537,534), hereinafter referred to as "Voigt-534."

10.   **As per claim 1**, Blumenau discloses a storage control apparatus comprising:

a data I/O control section which has a plurality of communication ports each of

which is connectable with any of a plurality of information processing apparatuses (col.

8, lines 24-28, 36-37, and 40-41; col. 9, lines 50-57; Fig. 1, elements 20, 21, 22-25, 27,

and 35-36; and Fig. 2, elements 41-44), is communicatively connected to a plurality of

physical disk drives for storing data (col. 8, lines 24-35, 36-37, and 41-44; and Fig. 1,

elements 20, 26, 28-31, and 37-38), receives a data I/O request for data stored in the

physical disk drives from the information processing apparatuses via the communication

ports (col. 8, lines 48-49), and performs data read/write from/to the physical disk drives

in accordance with the received data I/O request (col. 8, lines 56-60); *It should be*

noted that "cached storage subsystem" is analogous to "storage control apparatus",

"storage controller" is analogous to "data I/O control unit", and "hosts" are analogous to

"information processing apparatuses."

a first memory storing a data which is read/written among the data stored in the

physical disk drives (col. 8, lines 36-37, 48-54, and 60-65; and Fig. 1, element 32); and

a second memory storing information on management of storage resources

including the communication ports and the physical disk drives (col. 27, lines 23-33 and

Fig. 25, element 282); *It should be noted that "virtual ports" are analogous to*

"communication ports." It should also be noted that the logical storage volumes directly

correspond to the storage devices (i.e. physical disk drives), see col. 8, lines 28-29.

wherein in response to reception of a transmission request of the information on management of the storage resource from a user via a user interface, an identifier of the communication port and an identifier of the physical disk drive are transmitted to said user interface (col. 30, line 59 – col. 31, line 2 and Fig. 30, elements 346 and 347). *It should be noted that "clicking on it with a pointing device" is analogous to "transmission request" and "system administrator" is analogous to "user." Also, see citation note directly above regarding logical storage volumes.*

Blumenau does not disclose expressly a second memory storing information on management of storage resources including a storage capacity of an area of the first memory allocated for each user using the information processing apparatuses;

wherein in response to reception of a transmission request of the information on management of the storage resource from a user via a user interface a storage capacity of the area of the first memory which have been allocated for said user are transmitted to said user interface,

and wherein a number of data blocks allocated to each area of the first memory is increased or decreased as needed to provide a set storage capacity of the first memory to each user usable by the user so as not to be affected by use of the first memory by the other users.

Voigt discloses a second memory storing information on management of storage resources including a storage capacity of the first memory allocated for each user using the information processing apparatuses (col. 6, lines 13-16; col. 7, lines 30-31; and Fig. 2, element 56);

wherein in response to reception of a transmission request of the information on

management of the storage resource from a user via a user interface a storage capacity

of the first memory which have been allocated for said user are transmitted to said user

interface (col. 6, lines 13-17; col. 7, lines 5-9 and 30-36; Fig. 4, elements 90, 104, and

106). *It should be noted that "as the administrator moves the sliding bar" acts as a*

"transmission request."

Blumenau and Voigt are analogous art because they are from the same field of

endeavor, that being storage systems that use logical storage units (LUNs) with

graphical user interfaces (GUIs).

At the time of the invention it would have been obvious to a person of ordinary

skill in the art to combine Voigt's LUN cache storage capacity indicator and GUI with

Blumenau's cached storage subsystem and GUI.

The motivation for doing so would have been because in a system with fixed

physical capacity, it would be beneficial to determine how much usable capacity can be

afforded simultaneously for each logical unit type, given the diversity of consumption

rates among the various types (Voigt, col. 3, lines 15-19).

The combination of Blumenau/Voigt does not expressly disclose a number of

data blocks allocated to each area of the first memory is increased or decreased as

needed to provide a set storage capacity of the first memory to each user usable by the

user so as not to be affected by use of the first memory by the other users.

Voigt-534 discloses a number of data blocks allocated to each area of the first

memory is increased or decreased as needed to provide a set storage capacity of the

first memory to each user usable by the user so as not to be affected by use of the first

memory by the other users (col. 6, line 60 – col. 7, line 9; Fig. 1, element 11). *It should*

be noted that "migrated" is analogous to "allocated", "tunes" is analogous to "increasing

and decreasing", and the "disk array" (element 11 in Fig. 1) is analogous to the "first

memory." It should also be noted that Voigt-534 does not disclose "other users",

therefore, the disclosed user in Voigt-534 will never be affected by use of the first

memory by other users.

The combination of Blumenau/Voigt and Voigt-534 are analogous art because

they are from the same field of endeavor, that being RAIDs.

At the time of the invention it would have been obvious to a person of ordinary

skill in the art to implement Voigt-534's tunable capacity disk array within

Blumenau/Voigt's RAID system.

The motivation for doing so would have been to optimize performance and

reliability (Voigt-534, col. 7, lines 1-2).

Therefore, it would have been obvious to combine Blumenau, Voigt, and Voigt-

534 for the benefit of obtaining the invention as specified in claim 1.

11.   **As per claims 2 and 5**, the combination of Blumenau/Voigt/Voigt-534 discloses

information on management of the storage resources includes:

first correlation between the physical disk drive and a data amount which can

be stored in the first memory among the data stored in the physical disk drive

(Blumenau, col. 8, lines 56-62); *It should be noted that when taking the broadest*

interpretation of the claim language it is clear that the limitations of the claim do not

identify what "correlation" specifically entails or the size of the "data amount." Blumenau

discloses reading data from the storage devices and writing the data (amount not

specified, but nonetheless still a discrete amount of data) back to cache memory, thus

disclosing a correlation between the storage devices and cache memory.

and information representing a second correlation between the first correlation

and the communication port (Blumenau, col. 8, lines 62-65). *Again, it should be noted*

that when taking the broadest interpretation of the claim language it is clear that the

limitations of the claim do not identify what "correlation" specifically entails. Blumenau

discloses that the data used in the "first correlation" (see citation directly above) is

written to the cache memory by the port adapters (which contain at least two ports, see

col. 9, lines 54-55), thus disclosing a correlation between the first correlation and the

communication port.

12.   **As per claims 3 and 6**, the combination of Blumenau/Voigt/Voigt-534 discloses

physical disk drives include a plurality of hard disk drives constituting a Redundant

Array of Inexpensive Disks (RAID) (Blumenau, col. 9, lines 16-19).

13.   **As per claim 4**, the combination of Blumenau/Voigt/Voigt-534 discloses a

method for controlling a storage control apparatus comprising:

a data I/O control section which has a plurality of communication ports each of

which is connectable with one of a plurality of information processing apparatuses

(Blumenau, col. 8, lines 24-28, 36-37, and 40-41; col. 9, lines 50-57; Fig. 1, elements

20, 21, 22-25, 27, and 35-36; and Fig. 2, elements 41-44), is communicatively

connected to a plurality of physical disk drives for storing data (Blumenau, col. 8, lines

24-35, 36-37, and 41-44; and Fig. 1, elements 20, 26, 28-31, and 37-38), receives a

data I/O request for data stored in the physical disk drives from the information

processing apparatuses via the communication ports (Blumenau, col. 8, lines 48-49),

and performs data read/write from/to the physical disk drives in accordance with the

received data I/O request (Blumenau, col. 8, lines 56-60); *It should be noted that*

"cached storage subsystem" is analogous to "storage control apparatus", "storage

controller" is analogous to "data I/O control unit", and "hosts" are analogous to

"information processing apparatuses."

a first memory storing a data which is read/written among the data stored in the

physical disk drives (Blumenau, col. 8, lines 36-37, 48-54, and 60-65; and Fig. 1,

element 32); and

a second memory storing information on management of storage resources

including the communication ports and the physical disk drives (Blumenau, col. 27, lines

23-33 and Fig. 25, element 282); *It should be noted that "virtual ports" are analogous to*

"communication ports." It should also be noted that the logical storage volumes directly

correspond to the storage devices (i.e. physical disk drives), see col. 8, lines 28-29.

said method comprising the steps of:

receiving a transmission request of the information on management of the

storage resource from a user via a user interface (Blumenau, col. 30, lines 59-62). *It*

should be noted that "clicking on it with a pointing device" is analogous to "transmission

request" and "system administrator" is analogous to "user."

and in response to said receiving step, transmitting an identifier of the

communication port and an identifier of the physical disk drive (Blumenau, col. 30, line

62 – col. 31, line 2 and Fig. 30, elements 346 and 347). *Also, see citation note directly*

above regarding logical storage volumes.

a second memory storing information on management of storage resources

including a storage capacity of an area of the first memory allocated for each user using

the information processing apparatuses (Voigt, col. 6, lines 13-16; col. 7, lines 30-31;

and Fig. 2, element 56);

in response to said receiving step, transmitting a storage capacity of the first

memory which have been allocated for said user to said user interface (Voigt, col. 6,

lines 13-17; col. 7, lines 5-9 and 30-36; Fig. 4, elements 90, 104, and 106). *It should be*

noted that "as the administrator moves the sliding bar" acts as a "transmission request."

and wherein a number of data blocks allocated to each area of the first memory

is increased or decreased as needed to provide a set storage capacity of the first

memory to each user usable by the user so as not to be affected by use of the first

memory by the other users (Voigt-534, col. 6, line 60 – col. 7, line 9; Fig. 1, element 11).

It should be noted that "migrated" is analogous to "allocated", "tunes" is analogous to

"increasing and decreasing", and the "disk array" (element 11 in Fig. 1) is analogous to

the "first memory." It should also be noted that Voigt-534 does not disclose "other

users", therefore, the disclosed user in Voigt-534 will never be affected by use of the

first memory by other users.

14.   **As per claim 7**, the combination of Blumenau/Voigt/Voigt-534 discloses a

storage control apparatus comprising:

a channel control section which has a plurality of communication ports each of

which is connectable with any of a plurality of information processing apparatuses and

receives a data I/O request for data stored in physical disk drives including a plurality of

hard disk drives constituting a Redundant Array of Inexpensive Disks (RAID)

(Blumenau, col. 8, lines 24-28, 36-37, 40-41, and 48-49; col. 9, lines 16-19 and 50-57;

Fig. 1, elements 20, 21, 22-25, 27, and 35-36; and Fig. 2, elements 41-44); *It should be*

noted that "cached storage subsystem" is analogous to "storage control apparatus",

"port adapter" is analogous to "channel control unit", and "hosts" are analogous to

"information processing apparatuses."

a disk control section which is communicatively connected to the physical disk

drives and performs data read/write from/to the physical disk drives according to the

data I/O request (Blumenau, col. 8, lines 24-35, 36-37, 41-44, 56-60; and Fig. 1,

elements 20, 26, 28-31, and 37-38); *It should be noted that "storage adapter" is*

analogous to "disk control unit."

a first memory storing a data which is read/written among the data stored in the

physical disk drives (Blumenau, col. 8, lines 36-37, 48-54, and 60-65; and Fig. 1,

element 32);

and a second memory storing information on management of storage resources

including the communication ports and the physical disk drives (Blumenau, col. 27, lines

23-33 and Fig. 25, element 282); *It should be noted that "virtual ports" are analogous to*

"communication ports." It should also be noted that the logical storage volumes directly

correspond to the storage devices (i.e. physical disk drives), see col. 8, lines 28-29.

wherein in response to reception of a transmission request of the information on

management of the storage resource from a user via a user interface, an identifier of the

communication port and an identifier of the physical disk drive are transmitted to said

user interface (Blumenau, col. 30, line 59 – col. 31, line 2 and Fig. 30, elements 346 and

347). *It should be noted that "clicking on it with a pointing device" is analogous to*

"transmission request" and "system administrator" is analogous to "user." Also, see

citation note directly above regarding logical storage volumes.

a second memory storing information on management of storage resources

including a storage capacity of an area of the first memory allocated for each user using

the information processing apparatuses (Voigt, col. 6, lines 13-16; col. 7, lines 30-31;

and Fig. 2, element 56);

wherein in response to reception of a transmission request of the information on

management of the storage resource from a user via a user interface a storage capacity

of the first memory which have been allocated for said user are transmitted to said user

interface (Voigt, col. 6, lines 13-17; col. 7, lines 5-9 and 30-36; Fig. 4, elements 90, 104,

and 106). *It should be noted that "as the administrator moves the sliding bar" acts as a*

"transmission request."

and wherein a number of data blocks allocated to each area of the first memory

is increased or decreased as needed to provide a set storage capacity of the first

memory to each user usable by the user so as not to be affected by use of the first

memory by the other users (Voigt-534, col. 6, line 60 – col. 7, line 9; Fig. 1, element 11).

It should be noted that "migrated" is analogous to "allocated", "tunes" is analogous to

"increasing and decreasing", and the "disk array" (element 11 in Fig. 1) is analogous to

the "first memory." It should also be noted that Voigt-534 does not disclose "other

users", therefore, the disclosed user in Voigt-534 will never be affected by use of the

first memory by other users.

Response to Arguments

15.   Applicant's arguments with respect to **claims 1-7** have been considered but are

moot in view of the new grounds of rejection. Also, it should be noted that the Examiner

agrees with Applicant's position that Blumenau and Voigt do not disclose the limitations

recited above and again points Applicant's attention to the fact that claims 1, 4, and 7 as

originally presented in the instant application did not require these limitations and

therefore Applicant's claims were naturally not interpreted as being limited by these

limitations. Per Applicant's amendment, the Examiner has now limited the scope of

these claims to now include the aforementioned limitations. Please see the rejections

provided above.

Conclusion

STATUS OF CLAIMS IN THE APPLICATION

         The following is a summary of the treatment and status of all claims in the

application as recommended by MPEP 707.70(i):

CLAIMS REJECTED IN THE APPLICATION

Per the instant office action, **claims 1-7** have received a second action on

the merits and are subject of a second action final.

Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37
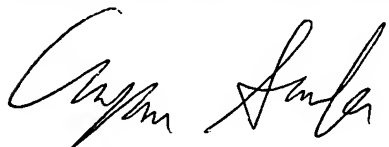
CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Arpan P. Savla whose telephone number is (571) 272-

1077. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on (571) 272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Arpan Savla
Assistant Examiner
Art Unit 2185
July 10, 2006